

Meeting WISHA Training Requirements

- To meet the WISHA training requirements for lockout/tagout, **you must include information specific to your worksite as indicated in slides # 7, 21 and 23.**
- Preview this program and include your specific workplace information before conducting the training.
- It is recommended you keep an attendance roster for your records to document training



How to Use this PowerPoint Program

- Users with PowerPoint can download, edit, and use the program for training with a laptop and multimedia projector.
- Additional information is found in the Notes section of this presentation. You can read the text in quotations, or use your own words.
- If you want to print out this program, the PDF file uses less computer memory and prints faster.





Lockout/Tagout

What This Training Will Cover:

Who needs training?

What is hazardous energy?

What is lockout/tagout?

What are the different types of lockout devices?

What is the requirement for tags?

What lockout/tagout procedures are required?



“This training is required by WISHA under their Lockout/tagout Rules.”

Who Needs Training?

Authorized employees –people who lock or tag out machines or equipment to perform servicing.

Affected employees –people who use machines or equipment on which servicing is performed under lockout/tagout.

Other employees –people who work in the area of locked out machinery or equipment



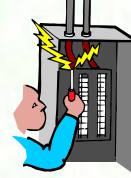
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“This sounds like almost everybody working around machinery, which is true. The reason for this is that everyone working around machinery should be aware of the hazards of starting up the machinery up while someone is doing maintenance or repair. This training provides an overview of lockout/tagout. Authorized employees will be further trained on the specific details and procedures of lockout/tagout as applied in our company.”

What is Hazardous Energy?

Hazardous energy is one of the following:

Electricity – live or stored



Moving machinery parts



Stored mechanical movement in machinery



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“Stored mechanical movement means some part of a machine can be moved by electricity, hydraulic fluid, air pressure, water pressure or gravity. This energy can sometimes still exist or be stored when the machinery is turned off. For example, hydraulic fluids can move machinery parts even when the motor or electricity is off, if a certain valve is opened.

In the truck photo, the upraised truck bed has hazardous stored energy because gravity could move it down on top of a mechanic working under it, if the bed is not physically blocked in the up position.”

What is Hazardous Energy?

Stored heat (steam lines or hot liquids)

Chemicals in pipelines under pressure or force of gravity

Any other active or stored energy sources that could harm a worker



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“Chemicals may not seem like stored energy in the normal meaning of the word, but some chemicals like acids, would cause injury if suddenly sprayed or splashed on a worker, thinking a pipeline is empty, disconnects a pipe or opens a valve.”

Hazardous Energy Source Examples

Live electrical lines

Electrical capacitors

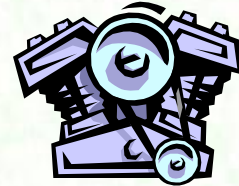
Lasers

Engines that move machinery parts

Hydraulic lifts

Pneumatic (air pressure) lines

Springs



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“Other examples include forklifts with the forks in the up position, steam and hot liquid pipes, fuel lines such as natural gas to heaters.

These examples are considered hazardous, because just “turning them off” does not guarantee they won’t accidentally be turned on again during maintenance or repair, or they continue to have stored energy after being “turned off”. Think of a compressed spring, or a pressured line that has not been bled off.”

Lockout/Tagout and Confined Spaces

Lockout/Tagout is important in confined spaces since it is easy to get trapped and hard to escape.

Pipelines leading into tanks must be blanked off before entering the space.

All electrical and mechanical hazardous energy must be addressed and locked out or tagged as needed.



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[If your employees enter confined spaces that include hazardous energy sources, these must also be addressed in your confined space standard. You can make mention of your confined space policies here.]

Our Hazardous Energy Sources

We have evaluated this workplace and found the following hazardous energy sources requiring lockout/tag-out procedures:

List specific workplace hazardous energy sources here



What kind of injuries can happen?

Electrocution from live parts

Scalding from steam or hot liquids

Chemical burns or poisoning

From machinery:

- Deep cuts and gashes
- Crushing injuries
- Amputations



All of these can be fatal when severe



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[Note: The photo may be too graphic or distracting for some people. You can make it disappear by clicking on the picture.]

Fatality Example

A man working inside a supermarket cardboard compactor was crushed when the unblocked compactor suddenly came down on top of him.

[Link to other fatality examples](#)



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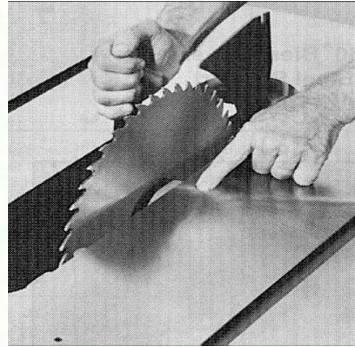
“This fatality happened recently in the state of Washington.”

When is Lockout/Tag-out required?

When someone will be servicing or repairing machinery or equipment

AND

the unexpected machinery start-up or release of stored energy could cause injury



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“In many fatalities or injuries, another employee will start up a machine or open a valve, not aware that someone else is repairing the machine. The person working on this saw obviously would not want someone inadvertently starting up the saw.”

Service and Maintenance Examples

Installing, constructing,
adjusting, modifying,
unjamming, cleaning,
lubrication, inspecting,
setup - preparing for
normal function



These activities often require a worker to place all or part of their body into the machine's hazard zone.



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“Service & Maintenance -- when the machine isn't being used for actual production and service, repair or maintenance work is being done.

Setup - a particular type of service to a machine when it is being prepared for production use.

In the photo, the setup person is installing and adjusting the dies for production stamping of a composite material.

Problems:

There is no block under the upper die to positively prevent it from coming down.

A key in the computer control on the other side of the machine is all that prevents machine activation.”

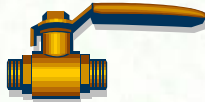
What is an energy-isolating device?

A device that physically prevents transmission or release of energy such as:

An electrical circuit breaker,



A pipeline valve,



A machine block,



Anything else that positively blocks or isolates energy.



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“These are also called “energy control devices”. Regular on-off switches (push buttons, selector switches, etc.) are not energy-isolating devices since they can fail – they are not designed for energy isolation.

There is one exception: On a motor vehicle such as a trucks and forklifts, WISHA will accept removal of the key from the ignition as electrical lockout even though a complete energy isolating measure would be to disconnect the battery.”

What is a Lockout Device?

A device that positively:

prevents a machine from being started up or turned on,

prevents a machinery part from moving,

prevents electrical energizing,

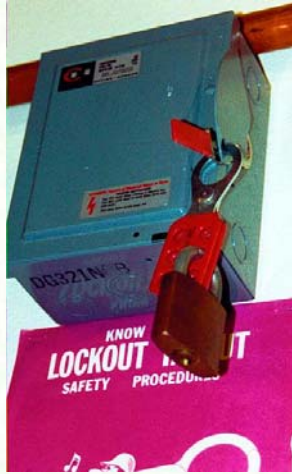
blocks a pipeline, steam line or air line



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“A lockout device is a usually a lock, key, valve or switch cover that holds an energy isolating or control device in the off or safe position until the lockout device is removed. Lockout must be done according to an established procedure.”

Electrical Lockout Devices



Locked out electrical panel



Locked out circuit breaker



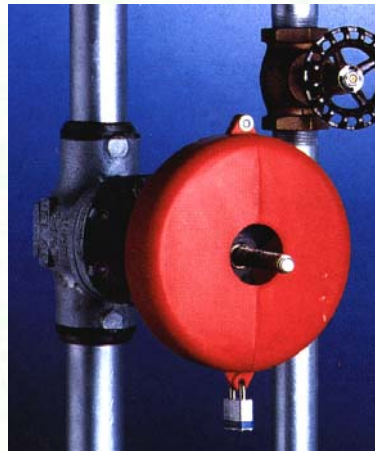
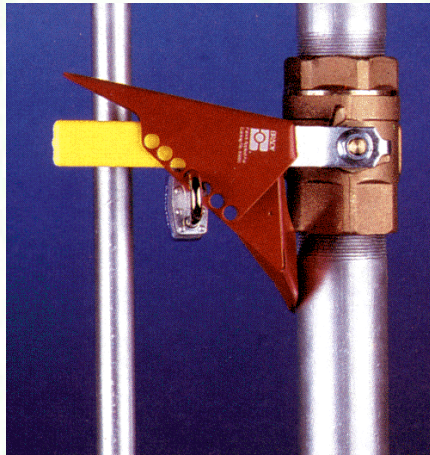
Locked out electrical plug

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“If you don’t have an electrical disconnect next to a machine, then you can attach a lock to the electrical panel. There are also individual circuit breaker locks, which may be better than locking the electrical panel cover since in an emergency, it may be necessary to get to the panel to shut off breakers other than the one that is locked out.

You don’t have to have a lockout procedure for a machine with all its energy controlled by pulling the plug if the worker maintains exclusive control of the plug. If that is not the case, the photo on the right shows how to lockout a plug at the end of an electrical cord.”

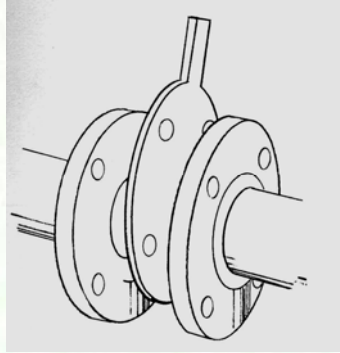
Fluid & Gas Lockout Devices



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“These lockout devices prevent the valves in air, water, gas or steam lines from being opened.”

Pipe Lockout Examples



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“A physical block or break in a pipeline prevents steam, gas or liquids from flowing through the pipe to the area where maintenance work is being done. For example, the pipe to a chemical tank must be blocked or disconnected before someone goes in to do repair or maintenance.”

Pneumatic Lockout Examples



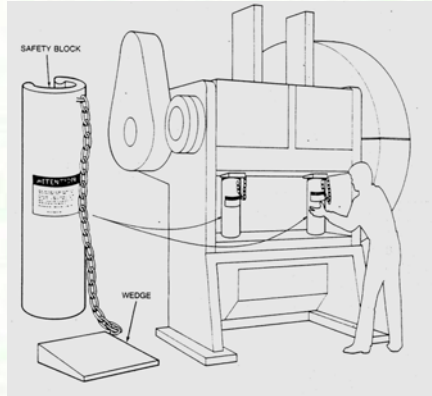
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“These devices prevent compressed air from flowing through lines and moving some part of the machinery. The locks prevent anyone from hooking up the lines while maintenance is being done.”

Physical Blocks



Truck bed lockout



Punch press blocks



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“WISHA has a specific rule regarding the support for a dump truck body. It has to be permanently mounted on the dump truck as shown in the photo of the truckbed.”

Group Lockout Devices

Used when more than one person doing maintenance or repair on same machine or equipment.

Machinery or equipment can't be started up until all locks are removed.

Each person places and removes their own lock.



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“Group or “gang” locks are typically used when several people are doing maintenance and repair at the same time on a machine or piece of equipment. Each lock should have a clear identification (usually a name) showing who it belongs to. No one can remove another person’s lock.”

Example of a bad lockout/tagout



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“This obviously not a real lockout device since it could be easily removed.”

Lockout Devices We Use

Describe or show your lockout devices here
and why they are used.



What is Tag-out?

Tags are warning devices only

They don't provide the same level of protection as lockout devices.

They can only be removed by an authorized person.

They must be legible, securely attached and resistant to degradation.



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“Tags cannot be used as a substitute for lockout devices. They can only be used alone if there is no other way to positively control hazardous energy. However, they are often used along with lockout devices as an additional warning. The separate sign can be used as further warning or information.”

Energy Control Program

Describe or discuss your company's energy control program here. Include specific procedures for each machine.



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[You can hand out a copy of the program here, or inform workers where it is located. This is a description of your company policy and practices on lockout/tagout , what employees must and must not do and what the consequences for not following procedures are.]

Lockout Procedures

Six Steps to Follow:

1. Notify affected employees that machine or equipment will be shut down and locked out
2. Shut down the machinery or equipment
3. Isolate energy sources with energy-isolating devices



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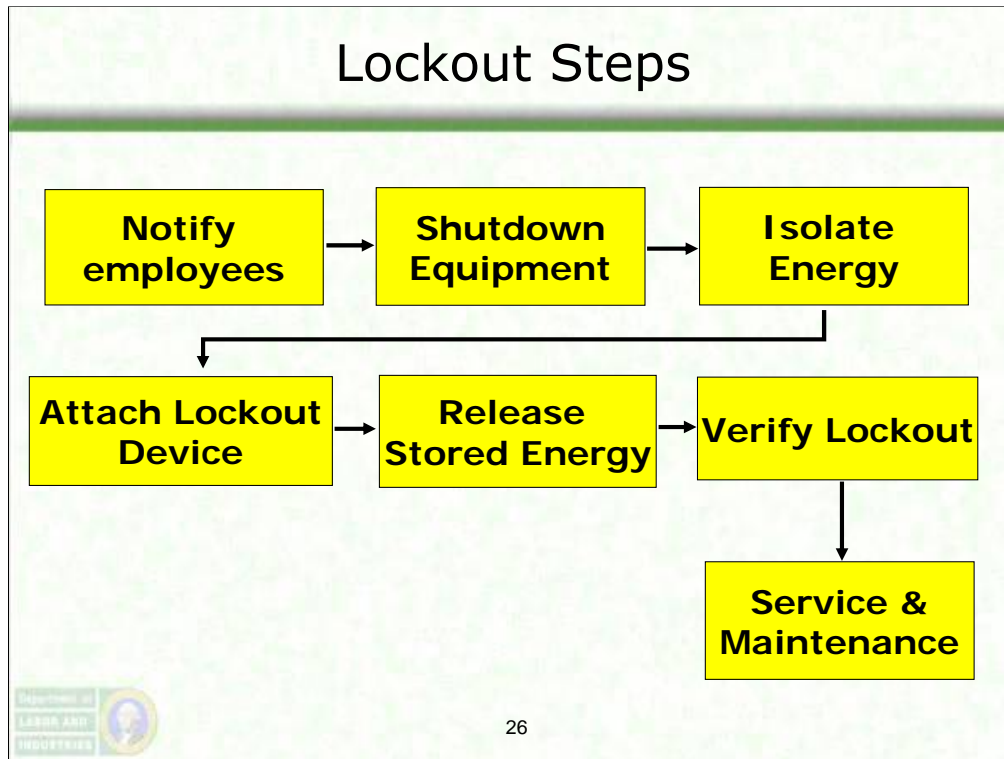
“These steps must be followed in the order shown.”

Lockout Procedures

Six Steps

4. Lock out energy-isolating devices with assigned locks.
5. Release or restrain stored or residual energy
6. Test machinery to make sure it can't start up





[A visual view of the two preceding slides.]

Examples of Release of Stored Energy

- "Slowly open the receiver tank port and bleed off any internal pressure."
- "Loosen both line valves to relieve all pressure in the cooling circuit."
- "Ground out capacitor..."



Examples of Attempt to Operate

- "...adjust the temperature cycle thermostat to check that all electrical energies have been shut off."
- "Push the start function button to verify that electric power has been removed."
- "Crack the steam inlet and discharge line outlet valves..."



Start-up Procedures

Only authorized employee can do startup

All warned to stay clear

Remove all tools, locks and tags

Remove, reverse, open or reactivate isolating devices

Visual check that all is clear

Start up machine, process or line flow



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“These steps must also be followed in the order shown.”

Quiz

Question 1

Which of the following is not hazardous energy?

- a) Electricity
- b) Compressed air
- c) Steam
- d) Cold water in a pipe



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d) is the correct answer if the pipe was outdoors, but large amounts of water that could fill up a confined space would still be considered hazardous since a worker trapped in the confined space could drown.

Quiz

Question 2

When are warning tags alone O.K?

- a) Always
- b) Never
- c) When everyone knows what they mean
- d) When there is no alternative



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d) is the correct answer

Quiz

Question 3

When can you not follow lockout procedures?

- a) When the foreman says so
- b) Never
- c) If you know where everyone is
- d) When needed to meet a deadline



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b) is the correct answer